RATS

VERSION 6

Getting Started

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Section I: Introduction

Where to Begin

If you are new to RATS, we recommend that you begin by reading through this guide. In particular, be sure to read Section IV on using RATS in interactive mode. Then work through the tutorial in Chapter 1 of the *User's Guide*.

If you are an experienced RATS user, we recommend that you look over this guide to see what is new and different about the RATS interface, and then turn to the *User's Guide* for an overview of the new features and changes in the RATS language.

What's Included in Your RATS Package

In addition to this guide, your RATS package should include a CD ROM containing the RATS software, as well as the *User's Guide* and *Reference Manual* books. The *User's Guide* provides general instructions on using RATS, discusses a variety of topics, and includes extensive examples. The *Reference Manual* provides a detailed description of each instruction and function in RATS, as well as other elements of the RATS language.

Estima offers two versions of RATS for Windows®: WinRATS and WinRATS Professional. The two versions are identical except that the Professional version includes the Census Bureau's X11 seasonal adjustment routine and support for exchanging data with FAME® format databases.

In addition to the RATS software itself, your RATS package includes

- Copies of the *User's Guide* and *Reference Manual* in Adobe's PDF format, which you can view using Adobe Acrobat Reader. If you don't already have a copy of Acrobat Reader, you can install one from the "Adobe Acrobat Reader" folder included on your RATS CD.
- A menu-driven data handling utility called RATSDATA. This is of less importance in Version 6, because most of its functionality has been incorporated into RATS itself. However, some users may still find the stand-alone version useful.
- A large selection of full example programs (many of which are discussed in the manuals). This includes complete sets of worked examples from several popular econometrics textbooks, which are installed in the "Textbook Examples" folder.
- A number of RATS procedures. These are routines written in the RATS language that make it easy for you to implement complex tasks, such as unit-root testing, Box–Jenkins forecasting, and so on, with a single call to the procedure. See the "RATS Procedures" PDF file included with the program for a list of what is included. Many other procedure and example programs are available for downloading free of charge from our web site at www.estima.com. Many of these have been written by RATS users from around the world.

System Requirements

WinRATS requires:

- A Pentium or Pentium-compatible CPU.
- Windows 95 or later. RATS has been tested on 98, ME, NT, 2000, and XP.
- A minimum of 8 Mb of available RAM. The amount of memory available to RATS determines the amount of data you can handle. See "How RATS uses Memory" below for more information.
- A hard disk drive with at least 50 Mb of space available.

Your Serial Number

Your serial number is printed on the CD jacket or diskette label. It has a form such as WExxxx, WXxxxx, or NExxxx depending on which version you purchased, and whether it is a single-user license or a network license. The serial number is your key to getting updates and technical help. After installing RATS, you can use the *File–Preferences* operation to enter and save your serial number in the registry. You can then view the serial number at any time by selecting the *Help–About RATS* operation. You may also want to record this number somewhere you can find it, such as in the front of your manual.

Please fill out your registration form and return it to Estima, or use the convenient on-line registration form available on our web site. This is especially important if you bought the program through a dealer or through your purchasing department, as we will be unable to send you newsletters and other notices without an address.

How RATS Uses Memory

RATS performs all of its computations on data stored in memory, which allows RATS to run very quickly. This means that you will need to have enough memory available for RATS to store your data, as well as arrays, scalars, strings, and other variables you define. RATS will also need some temporary space for doing calculations (such as inverting arrays).

Each real number (series entry, array or formula element, etc.) requires 8 bytes of memory storage. To estimate the memory requirements of a given program, just multiply the total number of series you will be using by the number of observations per series, and multiply by 8. For example, 200 series of 200,000 observations each (for a total of 40,000,000 data points) would require approximately (200x200,000x8)=320,000,000 bytes, or approximately 320 Mb, of memory.

As you can see, most modern personal computers will allow you to handle fairly large data sets. For example, on a machine with 256 Mb of RAM, your operating system and other applications may use as much as half of the available memory or more. However, you are likely to still have 100 Mb or more available for handling your data, which would allow you to handle several million data points. Virtual memory can provide additional capacity, but will slow down computations significantly.

Section II: Installing RATS

To install RATS on your system:

1. Insert the CD in your CD ROM drive.
2. In most cases, the installation program still start automatically. If it does not, you can start the installation program by doing either of the following:
   a) Select the *Run* operation from the *Start* menu, and type in "`d:setup`", where "`d`" is the drive containing the CD or diskette. Hit `<Enter>` or click on "OK" to execute the setup program,

   or:

   b) From Windows Explorer, display the contents of the CD and double-click on the "`SETUP.EXE`" file.

The Setup software will guide you through the installation step by step.

Please note that the files on the disks are compressed, and must be decompressed by the install program to be useful. You cannot simply copy the files to your hard drive.

Choosing an Installation Directory

The installation software will ask you where you want the software to be installed—you can simply type in the desired directory if you want to use something other than the default choice. By default, RATS will be installed in the subdirectory:

`C:\Program Files\Estima\WinRATS 6.0\`

This conforms with standard practice for Windows applications.

However, you may find it more convenient to install RATS in a directory that is easier to locate and work with, such as:

`C:\RATS\`

or

`C:\WinRATS.600\`

Installation Options

After selecting the drive and directory on which you wish to install RATS, you will be given the choice of doing a standard, minimum, or custom installation. The standard installation installs all the items described below. The minimum installation installs only the RATS and RATSDATA application files, omitting the examples, procedures, and documentation files. The custom installation allows you to select the components you wish to install.

Program Files This includes the RATS program itself and the RATSDATA data-handling utility program.

Auxiliary Files These are additional support files required by RATS. You should install these if you are installing the Program Files.

Documentation This installs copies of the *User's Guide* and *Reference Manual* as Adobe PDF format files. You will need a copy of Adobe Acrobat® Reader to view these. An installer for Acrobat Reader is included in a separate folder on the CD, or you can download the software free of charge from www.adobe.com.

Examples and Procedures This includes a variety of complete example programs and data sets, and a number of RATS "procedures"—pre-written callable routines for performing tasks that require a sequence of RATS instructions. These are ordinary text files you can open and examine with the RATS Editor. We strongly recommend that you install these, as they are a very useful resource for using and learning various techniques in RATS. Additional procedures and examples are available from our web site (www.estima.com).

Enders Book The *RATS Programming Manual*, by Walter Enders, is included with RATS in Adobe PDF format. This is a very useful guide to more advanced programming techniques, which Professor Enders has graciously provided free of charge to the RATS community. This was written for Version 5 of RATS, but most of the information applies equally well to Version 6.

Textbook These are complete worked example programs and data sets for several popular econometrics textbooks.

Help Files The Help files for RATS and RATSDATA. These provide quick references to all of the instructions and functions in RATS and general instructions on using RATS and RATSDATA.

Section III: Using RATS–An Overview

Introduction

RATS is, for the most part, a command–driven application. You work in RATS by supplying an instruction, or set of instructions, for RATS to process. For example, you use the command **LINREG** to tell RATS to estimate a least squares regression with the dependent and independent variables you've specified.

You can type in instructions and execute them as you go, or you can create entire programs and save them to disk for later use. RATS uses ordinary ASCII text files, so you can create and edit your programs and output with RATS itself, or any other text-editor or word-processor that supports ASCII text files.

Version 6 does offer several menu-driven *Wizards* for many common tasks, including reading in data, doing transformations, estimation regressions, and doing hypothesis tests. These will be of particular interest to new RATS users who are just learning the RATS language.

Interactive Mode vs. Batch Mode

RATS can be used in two modes: interactive and batch.

In interactive mode, you work with the RATS Editor. This is a special text-editor that can interpret and execute RATS instructions. We call this interactive mode because it makes doing your analysis an interactive process. For example, suppose you execute a few instructions to estimate a regression model. After viewing the output, you decide to change your model slightly. With the RATS Editor, you can simply modify and re-execute the regression instruction itself, without having to re-run your entire program. You can also execute entire programs with just a couple of mouse clicks. And, you have access to the menu-driven *Wizards* for many common tasks.

In batch mode, you supply RATS with a complete RATS program. RATS automatically executes all of the instructions in the program in order, and saves the resulting output to a file.

Instructions on using RATS interactively begin on page 8. See page 24 for details on batch mode.

Section IV: Using RATS in Interactive Mode

Starting RATS

To start RATS in interactive mode, click on the *Start* menu, open the "WinRATS 6" folder, and click on the WinRATS icon.

This loads the RATS interactive interface, which we call the RATS Editor. You will see the RATS menu bar, the toolbar, and an empty worksheet window called NONAME00.PRG. (Whether or not RATS opens the empty worksheet at start–up is something you can control using the *Preferences*... operation on the *File* menu.)

The RATS Editor

The RATS editor is a text editor and interface to RATS, which allows you to:

- execute, modify, and re-execute RATS instructions. You can execute instructions line-by-line, or select a whole set of instructions and then execute them with a single keystroke or mouse-click.
- use menu- and dialog-driven *Wizards* to perform a variety of tasks. See Chapter 1 of the *User's Guide* for details.
- edit any text file. For example, you can store RATS instructions on a file for later execution in batch mode, examine and edit output files, and so on.
- access extensive on-line help information covering the RATS editor and all of the RATS instructions.
- display, save, load, and print RATS graphs. You can also export graphs to other common graphics file formats for importing into other applications.
- create or edit data series on RATS format files.

In the next few pages, we'll walk you through some basic features of the RATS Editor, and then provide more detailed information.

Executing Instructions and Ready/Local Mode

The RATS editor is a standard text editor with a twist: if you hit the <Enter> key on a line of text, that line will be executed as a RATS instruction. To try this, start RATS and type **SHOW MEMORY** followed by <Enter>. You will get output showing some statistics on the amount of memory available to RATS.

You will find there are times when you want RATS to stop bothering you and just let you edit your text. Very simple: just click on the "Ready/Local" toolbar icon ( ) or type <Ctrl>+L (see page 20 for more on using the toolbar icons). This switches you from "Ready" mode to "Local" mode (note that the "Ready/Local" icon is replaced by the "Local/Ready" icon , indicating that you are in local mode). In Local mode, hitting <Enter> simply inserts a carriage return. For example, if you enter local mode, type **SHOW MEMORY** , and then <Enter>, nothing will happen, except that the cursor will move to the next line.

To go back to Ready mode, click on the "Local/Ready" icon or hit <Ctrl>+L again. Use the arrow keys to put the cursor anywhere on the **SHOW MEMORY** line, and hit the <Enter> key. This time, RATS will execute the instruction.

Important Note: RATS allows you to have several windows open at a time, but it will only execute instructions from the window designated as the *input* window. See page 12 for details.

Executing Existing Commands

Chapter 1 of the *User's Manual* includes a step-by-step example which introduces many of the key RATS instructions. Right now, we'll show you how to execute some of that example. For now, don't worry about what these instructions do—we explain that in Chapter 1.

Put RATS into **Local** mode and type the following lines:

```
calendar 1959 1 12
allocate 1996:2
open data basics.xls
data(format=xls,org=columns)
table
```

Note that, because you are in Local mode, RATS doesn't execute the instructions when you hit <Enter>. Now put RATS back into **Ready** mode.

One way to execute these commands is to do it one line at a time. Just use the mouse or arrow keys to put the cursor on the first line (the **CALENDAR** line). The cursor can be anywhere in the line. Now hit the <Enter> key. RATS will execute the first command, which sets the frequency and starting date for this session, and the cursor moves to the second line. Keep hitting <Enter> to execute each line in succession. The **TABLE** command should generate a table of basic statistics for the series read in by the **DATA** command.

However, when you need to execute a block of instructions, it is usually easier and faster to select (highlight) the whole block of instructions and execute them all with a single keystroke or mouse click. You can select text using standard keyboard or mouse techniques:

- With the keyboard, you select text by holding down the <Shift> key, and then pressing ↑, ↓, <PgUp> or <PgDn>. For this example, move the cursor up to the line beginning with **CALENDAR** (using ↑). Hold down the <Shift> key and press the ↓ key five times. All five lines should be marked in inverse video or in color.
- With the mouse, you can select text in several ways. For example, you can point the cursor at the **CALENDAR** line, press and hold down the mouse button, and drag the cursor until you've selected all five lines. Or, you could click on the first line, then hold down the <Shift> key and click on the last line.

To try this, select all the lines from **CALENDAR** down to **TABLE**, and either hit the <Enter> key or click on the "Run" icon ( ) on the toolbar to run the commands again.

You may have noticed that the "Run" icon changes to the "Stop" icon ( ) while RATS is executing the instructions. This indicates that RATS is busy executing instructions, and that you can click on "Stop" to interrupt the execution of these instructions. The "Run" icon returns as soon as the task is complete and RATS is ready to accept more instructions.

If you want to select all of the text in a window (if, for instance, you want to run a complete program), you can choose the *Select All* operation from the *Edit* menu, or click on the "Select All" icon.

The process of selecting text is key to many operations, such as printing or saving selected portions, cutting and copying text, and so on.

Saving and Opening Programs and Output

You can use the *Save* or *Save As...* operations on the *File* menu to save your programs or output to disk.

To open a program or output file you've saved to disk, just choose the *Open...* operation from the *File* menu.

Printing Text

You can print your programs and output by selecting the *Print...* operation from the *File* menu. This prints the contents of the active window. To print just a portion of the text in a window, first select (highlight) the text with the keyboard or the mouse, then select *Print...*. RATS will ask if you want to print just the selected text or the entire window contents.

Working with the RATS Editor

The RATS editor allows you to work with multiple "windows" of information. For example, you can enter RATS instructions in one text window and send the output to another text window, or have several files open at one time. In addition to text windows, RATS uses "graph windows" to display graphs and "series editing windows" for editing series stored on RATS format data files. In the next few pages, we describe the basics of working with windows, and then cover each of the menu operations in detail.

Definitions

RATS uses six different types of windows to display various kinds of information.

Text window	Text windows are used to view and edit text files and execute RATS instructions. See the preceding pages for details.
Graph window	Graphs are displayed in graph windows. When a graph window is active, you can use *File–Save As...* to save the graph to disk in any of several formats, and *File–Print* to print the graph.
Series List window	The Series List window displays a list of the series currently stored in memory. You can open this by selecting *Show Series* from the *Wizards* menu. From this window, you can double-click on a series to edit it, or use the toolbar icons to generate graphs and summary statistics for selected series.
Spreadsheet window	Many RATS instructions, such as **FORECAST**, **IMPULSE**, and **REPORT** include a WINDOW option that allows you to direct output to a spreadsheet-style window. You copy and paste information into other applications, or use *File–Export...* to export the data into a variety of different file formats.
Series Editing window	Series Editing windows are used for editing individual data series. You can edit series stored in memory (by double-clicking on a series in a Series List window) or series stored on RATS format data files (by using the *Open RATSDATA* or *New RATSDATA* operations on the *File* menu to open the file and then double-clicking on a series, or by using the **DEDIT** and **EDIT** instructions). The RATSDATA utility also uses data editing windows for creating or editing series.
Datafile List window	If you open or create a RATS format file, using *File–Open RATSDATA* or *File–New RATSDATA*, the contents of the file are displayed in a Datafile List window. The window shows the names, number of observations, frequency, entry range, and comments (if any) for each series. You can double-click on a series to view or edit the series, while toolbar operations allow you create new series, rename existing series, generate several types of graphs, and compute summary statistics. RATSDATA also uses Datafile List windows to display series lists.

Here are some other terms that we will use:

Active window	This is the front or top window—the window you are currently working with. You can switch windows by clicking on the window you want or by using the *Window* menu (see page 19). You can only edit text in a window when it is active.
Input window	At any given moment, one and only one of the open text windows is designated as the "input window." RATS will only execute instructions from that window. To execute instructions, this input window must be the active (front) window. To make a different window the input window, switch to the desired window (make it the active window) and select the *Use for Input* operation from the *Window* menu or the icon.
Output window	RATS sends any output it generates to the window designated as the "output window." This can be the same window as the input window (output is inserted immediately after an instruction or block of instructions), or a different one. You can use the *Use for Output* operation on the *Window Menu* (or the icon) to make the active window the output window.

RATS shows which windows are input and output by appending `{i}` (for input), `{o}` (output), or `{io}` (both input and output) to the window title, both on the window title bar and on the window list in the *Window* menu.

Window Basics

When you start RATS in interactive mode, the program normally opens an empty window labelled `NONAME00.PRG`. Since it is the only window, this window is the *active window*, the *input window* and the *output window*. RATS will execute any instructions you type in, and will insert any output in this window.

If you want to work with a specific file, the simplest procedure is to first close the empty window and then open your file. The new window will be *active*, *input* and *output*.

If you open a new window without closing `NONAME00.PRG` first, the new window will be the active window, *but not the input or output window*. You cannot execute instructions in this new window until you make it the input window. You can do that with the *Use for Input* operation on the *Window* menu. Similarly, *Window–Use for Output* makes the active window the output window.

Three Window Setups

We tend to use the text windows in one of three ways:

1. For quick work, we simply start up RATS and work with the NONAME window. If you aren't really interested in developing a set of RATS instructions to execute later and just want some quick answers, this is the simplest setup.
2. To test or run existing programs, we close NONAME (or configure RATS not to open a NONAME window—see page 14), open our file and run it as the sole window. We save or print whatever segments of the output that we need.
3. To develop a new (or existing) program, we designate one window as the input window, and a second window as the output window. With input and output in separate windows, it is much easier to keep a copy of the instructions that we decide we like.

   The and icons provide easy ways to get this split-window setup—they automatically open a second window, designate it as the output window, and tile the two windows horizontally or vertically, respectively.

Working With Graphs

RATS normally associates each graph you create or load from disk with its own graph window. This allows you to keep several graphs in memory at a time.

To print or save a graph, you just need to bring the desired graph window to the front and select *File–Print* or *File–Save As...* or click on the "Print" or "Save" icons. You can also save graphs using the **OPEN PLOT** or **ENVIRONMENT GSAVE** instructions prior to drawing the graphs—see Chapter 3 in the *User's Guide* for details.

You can configure RATS to use only one graph window. In that case, the first graph opens a new graph window. Any later graphs simply replace the previous graph in the same window. See "Customizing the RATS Editor" on page 14.

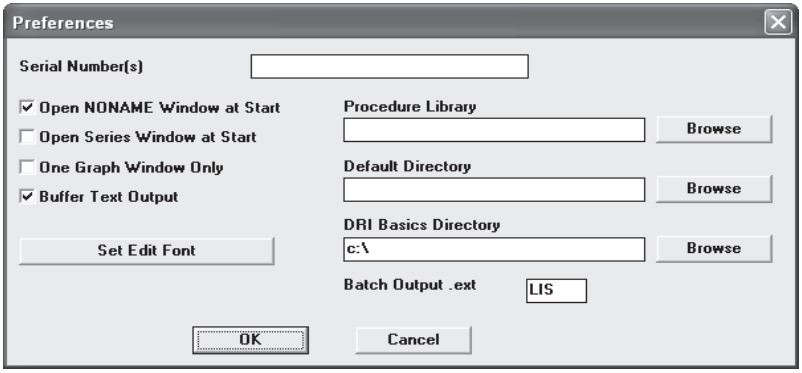
See the "Graphics" chapter in the *User's Guide* for further information.

The Toolbar

RATS includes a "Toolbar" that allows you to accomplish quickly various operations by simply clicking on icons with the mouse. See page 20 for details on the toolbars.

Customizing the RATS Editor

The *Preferences...* operation on the *File Menu* lets you customize various aspects of the RATS environment. Selecting *File–Preferences* brings up this dialog box:



This dialog box allows you to control the following settings:

Serial Number

You can use this field to store your RATS serial number in the registry. This allows you to view the serial number at any time by doing *Help–About RATS* (or *File–Preferences*). For convenience, you can also store serial numbers for other RATS products (such as the CATS cointegration procedures)—just separate each serial number by a semi-colon (;). Note: in some cases, the installation program may be able to save the serial number in the registry automatically.

Open NONAME Window at Start

This controls whether or not RATS automatically opens up an empty text window each time you start the program.

Open Series Window at Start

Turn this on if you want RATS to automatically open the Series List window (displaying the series in memory) when the program starts.

One Graph Window Only

If this is on, RATS re-uses the same window each time you generate a new graph. Otherwise, it displays each new graph in its own window.

Buffer Text Output

Turn this off if you want RATS to display each line of output as it is generated, or buffer output and only update the screen periodically. The latter is usually much faster for programs that generate a great deal of output.

Set Edit Font

You can change the font and type size used in the RATS editor by clicking on the this button. This controls the appearance of text both on the screen and when printed.

Procedure Library

The Procedure Library field allows you to specify a file of procedures that you want RATS to load automatically each time you start the program or clear the memory.

Default Directory

The Default Directory field allows you to change the default startup directory. If you select a directory here, and answer "Yes" when RATS asks if you want to make the changes permanent, that directory will be the default directory each time you start the program. Note: Use the *File–Directory* operation if you just want to change the default directory for the current session.

DRI Basics Directory

If you have a copy of the DRI Basics economic database, you can use the "DRI Basics Directory" to tell RATS where these files are located so that you can read data from those files into RATS using the `FORMAT=DRI` option on the **DATA** instruction.

Batch Output .ext

This field lets you specify the extension that is appended to output files when running in batch mode. See page 24.

The RATS Menu Bar

The RATS Editor provides four menus: *File*, *Edit*, *Wizards*, *Window*, and *Help*. These are very similar to those available in many other Windows applications. We describe the menu operations briefly below. The on-line help provides additional details on many of the menu operations.

The File Menu

The *File* menu provides standard file-handling and related operations.

New	opens a new, empty, text window.
Open...	opens an existing text file and displays its contents in a new window. This will only be the input window if there are no other open text windows. Use the *Open Graph...* operation to open a graph file.
Close	closes the active window. RATS will give you a chance to save any changes before closing the window. You can also close a window by clicking on the "close box" in the upper right corner of the window or hitting <Ctrl>+<F4>. If you close the input window, RATS does a *Clear Program* operation (see below).
Merge...	inserts the contents of an existing text file into the active window at the current cursor position.
Save	saves the entire contents of the active window to disk using the current file name (which appears at the top of the window). *Save* will prompt you for a file name if necessary.
Save As...	saves the contents of the active window to disk, using a filename you select. If you have text selected in the window, *Save As* will ask if you want to save the selected block, or the entire window.
Export...	exports the contents of a spreadsheet display window to a file. You can choose from a variety of formats.
Open Graph...	opens a RATS graph (saved in RGF format) and displays it in a graph window.
New RATSData, Open RATSData	Respectively, these open a new or existing RATS format data file, and display a Data File window associated with that file. Toolbar operations allow you to create new series, rename, view, or edit existing series, and display graphs and summary statistics. The *Open RATSData* operation is also the first step in using the RATS format *Data Wizard* to read data from a RATS data file into memory. See Chapter 1 of the *User's Guide* for details.

Print Setup...	selects a printer, and allows you to set printer–specific options.
Print	prints the contents of the active text or graph window. To print just a portion of a text window, select the desired lines before doing *Print*.
Directory...	lets you change the default drive and directory for files.
Preferences...	customizes the behavior of the RATS editor. See page 14.
Batch Mode	(Windows only) puts RATS into "batch" mode. See page 24.
Clear Program	clears the current RATS "program" (all data series, other variables, **CALENDAR** and **ALLOCATE** settings, etc.) from memory. Use *Clear Program* (or the icon) when you want to enter a new program, or re-execute a program from the beginning. This does *not* delete any text or close any windows.
Recent Files	Here, RATS provides a list of the most recently used files (up to a maximum of eight files). The list is preserved from one session to the next, so you can easily reopen files you were using in a previous session.
Exit	closes all windows and exits the RATS program. RATS will give you an opportunity to save any changes before quitting.

The Edit Menu

The *Edit* menu provides cut and paste and other editing functions. See the on-line help for further details.

Undo	"undoes" the recent changes. For example, if you have *Cut* a block of text, *Undo* will replace the text. *Undo* also works with data editing windows. You can use *Undo* repeatedly to "undo" up to the twenty most recent changes in each window. Note that *Undo* never reverses calculations—it applies only to editing operations.
Redo	"redoes" the results of the most recent *Undo*.
Cut	deletes the selected lines from a text window and copies the deleted text to the Windows Clipboard. You can use *Edit–Paste* to paste it back into RATS or into applications.
Copy	copies the selected information in the active window to the clipboard for later pasting, but does not delete it from the window. You can use *Copy* to copy text, graphs, or the contents of a spreadsheet display window. Any of these can be pasted into other applications.
Paste	copies the contents of the clipboard into a text window. This is only available when the clipboard contains text data—you cannot paste graphics or other non-text objects into RATS.
Clear	deletes the selected text, but does *not* copy the text to the clipboard.
Select All	selects every line in the active window. The simplest way to execute every instruction in the input window is to use *Edit–Select All* (or click on the "Select all" icon) and then hit the `<Enter>` key (or click on the "Run" icon).
Find...	searches for a string of text in the active window. You can search from the beginning of the file (top of the window), or forward or backward from the current cursor position. Turn on the "Case Sensitive" check box for a case-sensitive search.
Find Next	repeats the most recent *Find...* operation.
Replace...	does a find-and-replace operation, locating a specified string in the active window, and replacing it with another string.
To Lower Case	converts the selected lines to all lower-case.
Show Last Error	moves the cursor to the line (instruction) that caused the most recent error.

The Window Menu

The *Window* menu offers several operations for working with RATS windows. Also, a list of all open windows appears at the bottom of the *Window* menu. You can switch to a window by selecting it from this list.

Tile Horizontal	"tiles" the open windows so they are all visible on the screen, using a horizontal orientation (windows will be wider than they are tall).
Tile Vertical	tiles the open windows, using a vertical orientation (windows will generally be taller than they are wide).
Cascade	stacks the open windows so the title bar of each window is visible.
Close All	closes all open windows. RATS will give you a chance to save any changes to text windows.
Close All Graphs	closes all graph windows. You will not be asked if you want to save changes, so if you want to save any of your graphs, be sure to do so before selecting this operation.
Close All Reports	closes all spreadsheet windows created using `WINDOW` options.
Use for Input	makes the active text window the input window.
Use for Output	makes the active text window the output window.

The Toolbar Operations

The RATS and RATSDATA toolbars provide several "shortcuts" for various operations. The toolbar appears at the top of the screen, just below the menu bar. The various operations are represented by "picture" icons, as shown below. To do an operation, just click on the desired icon or text item.

Text Editing Windows

The following icons appear in the toolbar icons when a text window is active. Some icons are disabled (and appear dimmed) under certain conditions.

(Open) — Shortcut for *File–Open*. Opens a text file.

(Save) — Shortcut for *File–Save*. Saves the contents of the active window to disk.

(Print) — Shortcut for *File–Print*. Prints the contents of the active window.

(Functions) — This opens the *Function Wizard*. See Chapter 1 of the User's Guide for details.

(Input) — This designates the active (front) window as the Input window. It is equivalent to the *Window–Use for Input* operation.

(Output) — This designates the active (front) window as the Output window. It is equivalent to the *Window–Use for Output* operation.

, — These set up split Input and Output windows. The first tiles them horizontally, the second tiles vertically—see page 13.

(Select All) — Shortcut for the *Edit–Select All* operation. Selects all the text or items in the active window.

(Run) — Runs the selected instructions, or the instruction on the cursor line, if any (equivalent to hitting <Enter>). Disabled if the active window is not the input window.

(Stop) — While RATS is processing instructions, the "Run" icon changes to this "Stop" icon. You can click on this to halt the processing of the instructions.

(Ready/Local) — Clicking on this switches RATS from Ready to Local mode. The icon will change to "Local/Ready" (), indicating that RATS is in Local mode. Click the icon again to change back to Ready mode. You can also hit <Ctrl>+L to switch between modes. This button is disabled if the input window is not active.

(Clear Mem.) — This clears the memory. It is equivalent to *File–Clear Program*.

Graph Windows

When a graph window is active, RATS will display the "Save" and "Print" icons, along with the "Fix" (or "Unfix") icon:

(Fix) Clicking on this icon "fixes" the graph proportions. Resizing the graph window will change the size of the graph, but not its proportions or general appearance. If you then print or save the graph (in any of the available file formats), the graph will be printed or saved using these fixed proportions.

(Unfix) When you fix the proportions of a graph, the "Fix" icon changes to the "Unfix" icon. If you click on "Unfix," RATS will be free to change the proportions of the graph whenever you re-size the graph window.

See Chapter 3 of the *User's Guide* for details.

Series List Windows

The following icons are available when you display a Series List window (a list of the series stored in memory) by selecting the *Wizards–Show Series* operation:

(Select All) Shortcut for the *Edit–Select All* operation. Selects all the series in the list.

(Graph) displays a time series plot for the series.

(Histogram) displays a histogram plot for the series.

(Box Plot) Displays a box plot for the selected series.

(Statistics) Computes and displays descriptive statistics for the selected series, including the number of observations, mean, standard error, and maximum and minimum values of each series.

Data File List Windows

When you display a Data File List window (a listing of the series stored in a RATS format data file) by selecting the *File–Open RATSData* operation, the five icons shown above are available, plus three additional icons:

(Layout) This brings up the "List Which Series" dialog box, which allows you to control which series are listed by on the names or comments of the series, and choose whether or not the list will be sorted by name, or the order in which the series are stored on the file.

(New Series) Adds a new series to the file. RATS will display a dialog box allowing you to specify the structure and frequency for the series, and then will open a Series Editing Window to enter values for the series. When you are finished entering values, close the editing window. RATS will prompt you for a name for the series, and then will add the series to the file.

(Rename) allows you to change the name of the selected series.

The menu-driven RATSDATA utility program uses the same window format. You may find it handy to use RATSDATA for converting data to and from RATS format files, or for quickly creating or editing series or generating graphs (see the Help system in RATSDATA for details). However, virtually all of the functionality of RATSDATA has now been incorporated in RATS itself. So, in most cases you will probably find it easiest to just use the *File–New RATSData* and *File–Open RATSdata* operations in RATS to do this kind of work.

Series Editing Windows

The following icons are available when editing a series (either a series in memory or a series on a RATS format file):

(Insert) Inserts a new cell at the current cursor position (cell value is set to NA).

(Remove) Removes the current cell and shifts the remaining data one position to the left to fill its place.

(NA) Sets the current cell to the missing value code (NA, or Not Available).

(Undo) "undoes" the current operation. Equivalent to *Undo* on the *Edit* menu.

(Max. value) moves the cursor to the cell containing the largest (maximum) value in the series.

(Min. value) moves the cursor to the cell containing the smallest (minimum) value in the series.

(Graph) displays a time series plot for the series.

(Histogram) displays a histogram plot for the series.

Please see the on-line help for further details on using data editing windows.

Interactive Help

RATS includes an extensive help facility. The Windows version uses the standard Windows help system, which makes it easy to search for help on a topic, jump to related topics, move back and forth through previously viewed help topics, and so on. You can even copy information (such as the syntax for a RATS instruction) from a help window into a RATS window.

The help system provides information on using the RATS editor, brief descriptions of every RATS instruction, and general tips on getting started with RATS.

Accessing Help

You can open the main RATS help screen by hitting <F1> while RATS is active, or selecting *Contents* from the RATS *Help* menu. This provides a brief introduction to the help system, and provides a choice of a number of general help categories. Just click on any of the links to jump to that topic.

Menus and toolbar icons at the top of the window allow you to access various special features of the Help system. For general instructions on using the help system, select *Using Help* from the RATS *Help* menu or, if you've already opened the help screen, choose *How to Use Help* from the help screen's *Help* menu. To get help on a particular topic, select *Help–Search*. This allows you to do a keyword search through the available help topics.

Section V: Using RATS in Batch Mode

Batch Mode

In *batch mode*, RATS automatically reads instructions from a text file and stores the resulting output in another (new) file. This is very convenient for running long programs, because you can start RATS and then leave the computer unattended while it executes the program. You can create these programs using the RATS editor or any word-processing program that can save files as plain (unformatted) text. Similarly, you can view the output with RATS or any other word-processor.

Running Programs in Batch Mode (Windows versions)

There are three ways to run WinRATS in batch mode:

One method is to start RATS, put it into batch mode using the *Batch Mode* operation on the *File* menu, and then drag and drop your program files from Windows Explorer (or File Manager) onto the active RATS application. This is most useful if you have several programs that you want to run.

Another method is to run from a command prompt—either via the *Run* operation on the *Start* menu, or by opening the "Command Prompt" shell. You simply type the name of the RATS application itself, followed by the name of the program you want to execute and the command-line switch "`/RUN`".

Finally, you can also execute RATS in batch mode from a short cut icon. This method is most useful if you have a particular program that you need to run frequently.

In any case, RATS will automatically run the specified program(s), and save the output in a new file (or files) with the name *filename.ext*, where *filename* is the name (first 8 characters) of the input file, and *ext* is the "batch mode extension" specified in the *File–Preferences...* operation in RATS (the default extension is LIS). The file(s) will be saved in the same directory as the program file(s).

Details on all three methods follow:

Drag and Drop Method

To run a program as a batch job using the drag and drop method, do the following:

1. Start RATS by double-clicking on the WinRATS icon.
2. Switch RATS into batch mode by selecting the *Batch Mode* operation from the *File* menu.
3. Open Windows Explorer and arrange the screen so that you can see both the WinRATS window and the Explorer window on the screen at the same time.
4. Select one or more program files from Explorer, drag the file icon(s) over to the WinRATS window, and release the mouse button.

You can drag and drop the files one at a time, or you can drag and drop several files simultaneously. Note that a check mark appears next to the *Batch Mode* operation on the menu while RATS is in batch mode. To switch back to interactive mode, just select the *Batch Mode* operation again.

If you use batch mode frequently, you may want to create a copy of the WinRATS icon that will automatically start RATS in batch mode. Here's how:

1. Make a copy of the WinRATS program icon (see your Windows documentation or help for details).
2. Right-click on the RATS icon to display the properties dialog for the new icon.
3. Set the icon to "Run minimized" and click on OK.

Now, when you double click on this new icon, RATS will automatically start up with the *Batch Mode* switch turned on. You will need to click on the minimized icon to open it up into a window. You can then drag and drop program files onto the window.

Command Prompt Method

If you are comfortable with using the Command Prompt shells in Windows, or are used to using the older DOS version RATS386 in batch mode, you may find this method useful. You simply need to open the Command Prompt window from within Windows, and then type in the name of the RATS executable file (`RATS32S.EXE` for WinRATS, `RATS32SX.EXE` for WinRATS Professional), the name of the input file, and the "`/RUN`" switch, separated by spaces. For example, the command line for WinRATS might look like:

```
c:\winrats.600\rats32s.exe c:\test\myprog.prg /run
```

This will run the job and save the output to myprog.lis (unless you have used *File–Preferences* in WinRATS to change the default output filename extension). You can include commands like this in a DOS batch (.bat) file if desired.

Short Cut Icon Method

There are several ways to create shortcut icons—see your Windows on-line help or documentation for details. One method is to right-click on the desktop, and select *New–Shortcut* from the pop-up menu.

In the command line, enter the command to run the desired program, just as shown under "Command Prompt Method" above.

Click on the "Next" button, enter a name for the icon, and click on the "Finish" button. This will create the batch job icon on your desktop—you can double-click on this to run the job.

Command Line Switches

RATS offers several command line "switches" to control batch mode operation:

/NOSHOWGRAPHS	Suppresses display of graphs in batch mode.
/PRINTGRAPHS	Prints graphs as they are generated.
/PLOT=filename	Saves graphs to the specified plot file. Equivalent to putting an **OPEN PLOT** instruction in your program.
/DATA=filename	Opens the specified file as the **DATA** unit. Equivalent to an **OPEN DATA** instruction.
/COPY=filename	Opens the specified file as the **COPY** unit. Equivalent to an **OPEN COPY** instruction.
/PROC=filename	Designates *filename* as a Procedure Library file—the commands in this file will automatically be processed before the specified program file is executed.

To use a particular switch, just add it to the end of the command line (you can use more than one switch if you wish). For example:

```
c:\winrats.600\rats32s.exe /run /noshowgraphs /plot=myplot.rgf
```

executes the instructions in MYPROG.PRG, saves the graphs in the file MYPLOT.RGF, but does not display the graphs to the screen.

Section VI: File Handling and File Names

How RATS Uses Files

RATS uses files for several purposes:

- RATS instructions
- Data input
- Program output
- Data export
- Graphs

If you are working in interactive mode, you open program files with the *File–Open...* operation, and save output or graphs using the *File–Save As...* operation.

Most other file operations are handled using the **OPEN** instruction. For example, opening and reading a data file is handled with an instruction of the form:

```
open data mydata.rat
data(format=rats)
```

In the **OPEN** command above, "DATA" is the name of the Input/Output unit associated with the file name. We use it here because DATA is the default unit used by the **DATA** command. **COPY** is the command most commonly used to write data to a file, and as you might expect, the default unit name for the **COPY** command is "COPY", so we normally use a command of the form:

```
open copy export.rat
copy(format=rats)
```

to write out data. See the **OPEN** command in the *Reference Manual* for more on I/O units and opening files.

Two other instructions, **SOURCE** and **DEDIT**, are also used for working with files:

- **SOURCE** temporarily switches the input source to a file. This is most commonly used to read in and compile procedures stored on separate files, such as the .SRC files supplied with RATS.
- **DEDIT** initiates editing of a RATS format data file.

Specifying File Names

Wherever RATS requires a file name, you can use any legal file name as long as the total length is no greater than 255 characters. If you give the name of a non-existent file for an INPUT, DATA or SOURCE file, RATS will print an error message and prompt you for the proper file name.

If you are writing an instruction that uses a file name or path that includes blank spaces, you need to enclose the entire name in quote marks:

```
source "c:\myfiles\long program name.prg"
```

If you set a default search path (with *File–Directory*), RATS will add that path to any file name which does not include either a drive or path specifier.

While it is not required, we would suggest that you use a .RAT extension for RATS format data files. We also suggest that you use .PRG, .RGF, and .SRC extensions for program, graph, and procedure files, respectively. However, RATS does not make any assumptions about the format of a file based on its extension, so you can use any extensions you like.

Section VII: Technical Support

Introduction

Support is not cheap, but we think it is an important part of what you have paid for. The next three pages describe the procedures for obtaining support and the level of support which you can expect from us.

Your Serial Number

Your serial number will be printed on a label on the CD jacket. This serial number is your key to updates and technical help. As described on page 4, you can use the *File—Preferences* operation to store your serial number in the registry for later reference. You may also want to write the serial number in your manual, or somewhere else handy where you can find it.

If you are a new purchaser, fill out your registration form and return it, or fill out the "registration/address change" form available on our website. This is especially important if you bought the program through a dealer or through your purchasing department as we will be unable to send you newsletters and other notices without an address.

When contacting technical support, please supply your serial number so we can verify which version of RATS you are using.

Can RATS Do ...?

Many of these questions can be answered by checking the index and the table of contents in the manuals carefully, or by visiting our web site (www.estima.com), where your question may be addressed by the list of Frequently Asked Questions or by one of the many procedures and example programs available for downloading.

If you can't find the answer there, you can e-mail, fax, or call our technical support department with your question. The answers to these sorts of questions generally fall into four categories:

1. Yes (and you should have known it by looking at the index or table of contents). *Please be sure to check these first*.
2. Yes, you can use the instruction ...
3. Yes, but it takes a little work (a short sequence of instructions).
4. No, or at least it would be very difficult and require extensive programming.

Many of the suggestions made by users have helped to improve our product, so we try to be as helpful as we can. With types 2 and 3, we will usually tell you exactly how to do it. However, with type 4, we can only give you a general idea of what you have to do if you decide to press on.

Statistical Questions

RATS has many capabilities which may be unfamiliar to some of you. If you decide to explore some new territory, we will be happy to steer you to some good references or to explain how RATS does particular computations. However, while we can help to clear up basic misunderstandings about the use of the RATS instructions, we cannot give involved statistics lessons over the phone. If you are interested in discovering new techniques, watch the newsletter for information regarding workshops.

Bugs and Potential Bugs

In a program as complex as RATS, there are undoubtedly some bugs remaining. In addition, because RATS has many features of a programming language, it is quite possible for you to experience problems due to errors in your own code. The more complex your program, the more likely it is that the latter is true. If your program is not running correctly, you should do the following:

- Check carefully that you are using the proper syntax on the instruction(s) causing the problem. See the *Reference Manual* in particular.
- If you are doing extensive operations with loops and **COMPUTE** instructions, put in some debugging statements (**DISPLAY** and **PRINT** are the most useful for this) to see where things go awry.
- Check the list of frequently asked questions, and the list of known bugs, available on our web site (www.estima.com).
- If, after all this, you have a strong suspicion that you have located a bug, contact Technical Support. If you have done a thorough job on the preceding steps, you can often ask a direct question such as "Is there a known bug in ....?", and we may be able to give you a quick answer. If you have not been able to isolate the problem, we will almost certainly have to ask you to send us the input file and data and as much other information as you can supply.

The RATSletter

The *RATSLetter* is a newsletter for registered users. We distribute it (approximately) twice a year. It includes new product announcements, answers to common questions, bug reports, tips on the use of the program, lists of contributed procedures, among others. We would appreciate questions of general interest and suggestions. If you have a program or part of one which you are proud of, send it in and let the rest of the RATS community see it.

The Estima Web Site and the Internet Mailing List

We invite you to visit our Web site at: **http://www.estima.com**

The site offers news and information on RATS and other Estima products, answers to frequently asked questions, and many examples and procedures you can download.

There is also an internet e-mail discussion list devoted to RATS. See the Web site, or e-mail us, for details on subscribing.

Contacting Estima Technical Support

If you have access to e-mail, this is probably the best way for you to obtain technical support. You can provide us with a copy of your program and data set, and other very specific information about the nature of your question. This makes it much easier for us to resolve the problem or question, and to provide detailed answers. Most questions are answered within just a few hours. You can also contact us by calling the technical support number listed below. Technical support is available from Monday through Friday, 9 am to 5 pm US Central time. You can also reach us by fax or regular mail.

When you contact technical support please be able to provide the following:

1. Your serial number (found on the label on the CD envelope). We do spot checks to make sure that only those who have paid for the product get support.
2. The product name and version number (also from the original disks).
3. As much detail about your question as possible. In particular, if you are getting an error message you don't understand, be sure to include that error message in your e-mail, or have it handy to read to us over the phone. RATS produces fairly specific and detailed error messages, so providing the specifics of any errors you encounter will make it much easier for us to diagnose the problem.

You can contact technical support at:

Voice: (847) 864-1910
E–mail: support@estima.com
Web site: http://www.estima.com
FAX: (847) 864-6221

Mail: Estima
P.O. Box 1818
Evanston, IL 60204-1818

If you write or FAX us with a question, please remember to include your name and a phone or FAX number.